Message

From: Matt Tonkin [matt@sspa.com]
Sent: 4/5/2018 9:52:37 PM
To: Whittier, Robert [Robert.Whittier@doh.hawaii.gov]; Donald Thomas [dthomas@soest.hawaii.edu]; Grange, Gabrielle Fenix [Gabrielle.Grange@doh.hawaii.gov]; G D Beckett [g.d.beckett@aquiver.com]; TU, LYNDSEY [Tu.Lyndsey@epa.gov]
Subject: RE: Red Hill Modeling

No apologies needed whatsoever, the data are vital to having the discussion.

Matthew J. Tonkin
S.S. Papadopulos & Assoc., Inc.
505 N. Pine St., Williamsfield, IL 61489-9517
Web: www.sspa.com // Email: matt@sspa.com // Skype: mattsspa
Office: (309) 616 9060 // Cell: (508) 815-9886

From: Whittier, Robert [mailto:Robert.Whittier@doh.hawaii.gov]
Sent: Thursday, April 5, 2018 4:13 PM
To: Matt Tonkin <matt@sspa.com>; Donald Thomas <dthomas@soest.hawaii.edu>; Grange, Gabrielle Fenix <Gabrielle.Grange@doh.hawaii.gov>; G D Beckett <g.d.beckett@aquiver.com>; TU, LYNDSEY <tu.lyndsey@epa.gov>
Subject: Re: Red Hill Modeling

Hi Matt & Don,

Sorry the request for the data came in just before a previously scheduled meeting so I sent the data set as is. I did not take time to format it for public consumption. It was intended to provide the data that would be followed by discussion.

Bob W.

From: Matt Tonkin <matt@sspa.com>
Sent: Thursday, April 5, 2018 10:55 AM
To: Donald Thomas; Grange, Gabrielle Fenix; Whittier, Robert; G D Beckett; TU, LYNDSEY
Subject: RE: Red Hill Modeling

Don, this just came to me, not the group – so I have added them on a reply here.

I had some similar questions about the data – definitely it seems that on the November data set the gradient is not seaward – a couple of the others seem essentially flat or without structure, and a couple seem to have a component that is mauka to makai. It looks like pumping at RHS is a significant factor in the mauka to makai data sets, and absent that it is flat/noisy/indeterminate. Certainly, it does suggest there is not a persistent and uniform mauka to makai gradient, which is what the base-case model indicates: it may be that it is highly variable but low-valued and so close to indeterminate. It interested me that the clinker-zone sensitivity case gave a better match to the gradients (at least, the flatness of them) in this area, and though it may not be a transmissive clinker zone that is the cause, something appears to be.

I do think there is a great role here for convolution, and I may try it with this data set because it looks ripe for it, on the face of it. I am curious if there are similarly frequently monitored levels in wells 02 and 03?

Thanks,

Matthew J. Tonkin
S.S. Papadopulos & Assoc., Inc.
505 N. Pine St., Williamsfield, IL 61489-9517
Web: www.sspa.com // Email: matt@sspa.com // Skype: mattsspa

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SSP&A Software Release: mod-PATH3DU – S.S. Papadopulos & Associates, Inc., in collaboration with the University of Waterloo, is pleased to announce the release of mod-PATH3DU v.1.1.0, a particle path and travel-time simulator for structured and unstructured grids.

Office: (309) 616 9060 // Cell: (508) 815-9886

From: Donald Thomas [mailto:dthomas@soest.hawaii.edu]
Sent: Thursday, April 5, 2018 3:43 PM
To: Matt Tonkin <matt@sspa.com>
Subject: Re: Red Hill Modeling

Hi Bob,

Have been looking at your graphs and have some questions but want to start out with a really stupid one:

You wrote that "The resulting gradient was 0.2 ft/mi going to the northeast or mauka." Is that increasing or decreasing to the northeast - and is there a convention when you refer to a gradient?

On to a simple clarification: in the mauka/makai water level plots, have you gone back and corrected the TOC for the earlier measurements?

Are these routinely done on the same day? Have you gotten the synoptic monitoring data to see what the "normal" change rate is in the water levels (I know that the raw synoptic data includes barometric pressure changes that need to be removed - do they do that before providing the data or is that something we would need to do?)

Looking at your plots, my brain instantly seizes up - too much happening simultaneously over too broad an area for me to come up with anything approaching a conceptual model for how these wells are responding to rainfall and pumping. Would really like to see some long term water level measurements (simultaneously in multiple wells) to try to make sense of what is going on.

Don

On 4/5/2018 8:28 AM, Matt Tonkin wrote:

> Bob:
>
> Thanks for this update, the timing is very important - is there any chance you have and could share those recent data and the plot that you made?
>
> Matthew J. Tonkin
> S.S. Papadopulos & Assoc., Inc.
> 505 N. Pine St., Williamsfield, IL 61489-9517
> Web: www.sspa.com // Email: matt@sspa.com // Skype: mattsspa
> Office: (309) 616 9060 // Cell: (508) 815-9886
>
>

From: Whittier, Robert [mailto:Robert.Whittier@doh.hawaii.gov]
Sent: Thursday, April 5, 2018 1:25 PM
To: TU, LYNDSEY <Tu.Lyndsey@epa.gov>; Grange, Gabrielle Fenix <Gabrielle.Grange@doh.hawaii.gov>; Matt Tonkin <matt@sspa.com>; g.d.beckett@aquiver.com; Donald Thomas <dthomas@soest.hawaii.edu>
Subject: Red Hill Modeling

Hi Lyndsey and All,

On Monday I received the latest Oil/Water Interface Report. As I normally do I plotted the water table elevations for the tunnel wells (i.e. RHMW03, RHMW02, RHMW01, and RHMW05). This is a line of wells that covers a mauka to makai distance of about 0.45 mi. The resulting gradient was 0.2 ft/mi going to the northeast or mauka. This implies the groundwater flow direction beneath the USTs that is exactly opposite of the flow direction simulated by the latest Red Hill groundwater flow model. I don't think this discrepancy has been adequately explained in spite of being brought up repeatedly. It appears from the proposed agenda that we moving from the groundwater flow model to the fate and transport model. Since the fate and transport model relies on the groundwater flow model, moving on to the fate and transport model seems premature.

Thanks,

Bob W.

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Donald Thomas
Center for the Study of Active Volcanoes
https://hilo.hawaii.edu/~csav/
Office Phone: 808 932 7554
Cell Phone: 808 895 6547